If you are using a printed copy of this procedure, and not the on-screen version, then you MUST make sure the dates at the bottom of the printed copy and the on-screen version match.
The on-screen version of the Collider-Accelerator Department Procedure is the Official Version. Hard copies of all signed, official, C-A Operating Procedures are available by contacting the ESSHQ Procedures Coordinator, Bldg. 911A

C-A OPERATIONS PROCEDURES MANUAL

15.5.9 Use of Dry Honer (Bead Blaster)

(Vacuum Group Procedure VA-008.18.1.9)

Note: This document was formerly a C-A Group Procedure. The content of the group procedure was reviewed by the Technical Supervisor. All approvals and/or issue dates of the original group procedure are maintained for present use.

Hand Processed Changes

HPC No.	Date	Page Nos.	Initials

Approved: _____***Signature on File***_____ _____
Collider-Accelerator Department Chairman Date

S. Gill

Vacuum Group Procedure VA-008.18.1.9
Original Issue Date: 01/01/00
Revision 01

*****IMPORTANT*****

PRIOR TO THE PERFORMANCE OF ANY WORK WITHIN THE SCOPE OF THIS PROCEDURE, IT IS THE RESPONSIBILITY OF THE SUPERVISOR TO ENSURE THAT ***WORK PLANNING*** HAS BEEN REVIEWED FOR THE PROTECTION OF WORKERS, EQUIPMENT, AND THE ENVIRONMENT.

1. PURPOSE:

1.1 TO PROVIDE AN EFFECTIVE PROCEDURE FOR AGS VACUUM TECHNICIANS TO SUCCESSFULLY BEAD BLAST COMPONENTS FOR USE IN THE A.G.S RING.

2. RESPONSIBILITIES:

2.1 THE AGS VACUUM SUPERVISOR SHALL BE RESPONSIBLE FOR THE IMPLEMENTATION OF THIS PROCEDURE.

3. DISCUSSION:

3.1 THIS PROCEDURE IS WRITTEN SO THAT TRAINED AGS VACUUM TECHNICIANS WILL BE ABLE TO SUCCESSFULLY AND EFFICIENTLY OPERATE THE BEAD BLASTING MACHINE LOCATED IN THE VACUUM LAB AT 911a.

4. PRECAUTIONS:

4.1 THE TECHNICIAN SHALL BE AWARE OF THE POSSIBLE RADIATION LEVEL OF THE PART TO BE BLASTED.

4.2 THE TECHNICIAN SHOULD USE A DUST MASK DURING THIS PROCEDURE.

4.3 THE TECHNICIAN SHALL CHECK THAT THE BEAD BLASTER GLOVES ARE IN FACT NOT DAMAGED AND HAVE NO HOLES IN THEM.

5. PREREQUISITES:

5.1 THE TECHNICIAN WILL HAVE BEEN TRAINED IN THIS PROCEDURE.

5.2 THE TECHNICIAN SHALL HAVE CONTAMINATION WORKER TRAINING FOR THIS OPERATION.

5.3 THE TECHNICIAN SHALL HAVE ACTIVATION WORKER TRAINING FOR THIS OPERATION.

5.4 A FILM BADGE IS TO BE WORN DURING THIS PROCEDURE.

5.5 SAFETY GLASSES ARE REQUIRED FOR THIS OPERATION.

5.6 THE WEARING OF A DUST MASK IS REQUIRED FOR THIS OPERATION.

S.? THE WEARING OF RUBBER GLOVES AND A DUST MASK ARE REQUIRED WHEN EMPTYING THE BLASTER BIN.

6. OPERATIONAL PROCEDURE:

6.1 AS PER MANUFACTURER SPECIFICATIONS FOLLOWING PAGE 2.

7. FINAL CONDITIONS:

7.1 WORK AREA (BLAST ROOM FLOOR) HAS BEEN VACUUM CLEANED USING A CERTIFIED HEPA VACUUM CLEANER.

7.2 WHEN EMPTYING BLASTER BIN, THE TECHNICIAN SHALL WEAR RUBBER GLOVES AND A DUST MASK AND SHALL *DOUBLE BAG* THE BLASTING MEDIA.

7.3 THE TECHNICIAN SHALL HAVE A HEALTH PHYSICS TECHNICIAN CHECK AND TAG THE BAGS FOR RADIOACTIVITY.

7.4 THE TECHNICIAN SHALL FOLLOW THE DIRECTION OF THE HEALTH PHYSICS REPRESENTATIVE FOR PROPER DISPOSAL OF THE MEDIA.

8. REFERENCE

8.1 SEARS OWNERS MANUAL “SANDBLAST EQUIPMENT”, MODEL 168081.

ATTACHMENT
DRY HONING PROCEDURE

INTRODUCTION

The BLAST-N-PEEN process is applied to:

a. Increase tensile strength and relieve stress by microscopic bombardment.

b. Remove burrs following machining or grinding operations, subminiature space age or large castings.

c. Produce a metallurgically clean surface for plating, painting, or other processes.

d. Increase cutting tool life by blending minute surface imperfections.

e. Improve releasing characteristics of molds and dies processing glass, rubber, plastics, or metal by blending finishing lines or marks.

f. Enhance lubrication by imparting a microscopically controlled dimpled surface.

g. Retain critical dimensions while producing the above results.

h. Reclaim and recondition parts by removing paint, rust, corrosion, etc. This process is also used on plastics, fiberglass, and rubber.

This machine is equipped with an abrasive Reclaim. The reclaim is a modified cyclone separator with a very delicate air balance into which dust and debris returning from the cabinet sump enters for separation, causing the reusable abrasive material to drop through the filter screen basket into the storage hopper to be reused for blasting. Air, dust, and debris are exhausted through the Reclaim into the dust bag or dry exhaust filter pan for discarding. The air balance is adjusted by setting the outlet of the Reclaim air pressure with a manometer. A constant pressure balance is necessary for proper separation as the Reclaim operates by a centrifugal balance of particeal weight and size.

INSTALLATION

Select a location depending on air and electrical service availability. Position equipment away from surrounding obstructions so as to permit efficient handling of large parts.

ELECTRIC SERVICE

A. Machines equipped with a 1/3, 1/2, or 1 H.P./1PH motor requires a 20AMP/115V/A.C.,1PH/60HZ electrical service.

B. For machines equipped with a 1 H.P. or 2 H.P. 230-460V/A.C., 3PH/60HZ blower motor - SEE WIRING DIAGRAM.

C. For safety, ground machine per local regulations.

NOTE: Before starting the blower on equipment with 230-460V/3PH/60HZ motors, check the rotation of the paddlewheel inside blower housing. To check, turn the toggle switch ON and OFF. This will cause the paddlewheel to spin slowly. By looking into the outlet of the blower, rotation of the paddlewheel can easily be observed. Paddlewheel rotation direction should be the same as the arrow direction on the blower housing [SEE RECLAIM INSTRUCTION SHEET].

AIR REQUIREMENTS

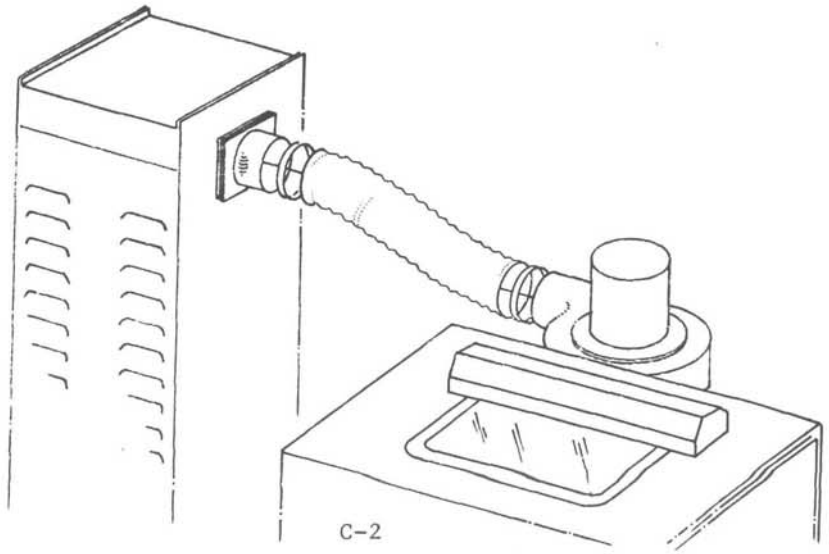
ORIFICE SIZE	CFM	PSI	NOTE:
No. 4	21.0	80	Connect 1/2" air line or larger to the moisture trap.
No. 5	31.9	80	
No. 6	47.0	80	
No. 7	62.0	80	
No. 8	85.7	80	

COMPRESSED AIR LINE PIPE SIZE

	VOLUME OF AIR IN CFM						
LINE LENGTH	25	30	35	40	50	60	70
25'	3/4"	3/4"	3/4"	3/4"	1"	1"	1"
50'	3/4"	3/4"	3/4"	1"	1"	1"	1"
75'	3/4"	3/4"	1"	1"	1"	1"	1"
100'	3/4"	3/4"	1"	1"	1"	1"	1"
150'	3/4"	1"	1"	1"	1"	1 1/4"	1 1/4"
200'	1"	1"	1"	1"	1"	1 1/4"	1 1/4"
250'	1"	1"	1"	1"	1"	1 1/4"	1 1/4"
300'	1"	1"	1"	1"	1"	1 1/4"	1 1/4"

DUST BAG

Connect the bag to blower outlet with clamp provided.



DRY EXHAUST FILTER INSTALLATION

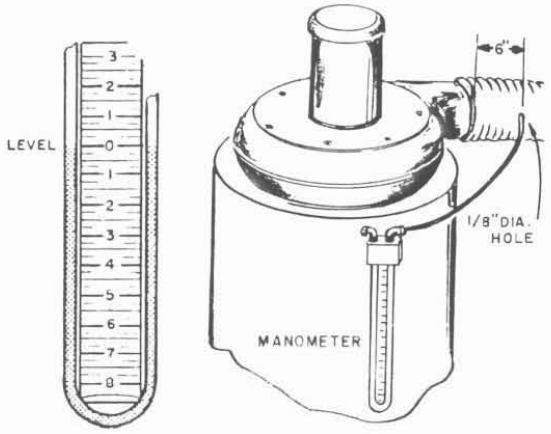
The dry exhaust filter consists of tubular cloth filter bags arranged to trap dust and debris and to allow clean air to pass into the atmosphere. Dust and debris trapped by the filter bags is shaken loose by PUSH and PULL action on the hand lever located on the side of the dry filter. After dust and debris is shaken loose it falls into the filter pan for easy removal.

A. Connect flex hose between blower outlet and the dry filter inlet pipe. Clamp flex hose securely in position.

B. Damper on dry filter inlet pipe [3] has been preset. However, some adjustment may be necessary because of operation at a higher altitude, use of smaller or larger beads, use of a blast media other than glass beads, or the type of material being processed.

MANOMETER READING FOR STATIC PRESSURE ON DRY FILTER

Drill a hole large enough for tubing needle to be inserted into flex hose or a small fitting to make a permanent installation. The illustration shows installation of manometer and method of taking the static pressure reading on BNP Peening machines using a push through type of blower on 300 to 900CFM Reclaim systems. Insert a fitting into flex hose approximately 6" from blower outlet. Fluid for use in the manometer should be mixed with water to the proper consistency [3/4 oz. Fluorescein Green Concentrate/ one quart water - REFER TO DIRECTIONS PACKED WITH INSTRUMENT]. Remove hex plug assembly and pour in fluid to proper level required [half full each tube]. Replace the hex plug assembly. Place manometer on side of Reclaim. Magnets attached to manometer will hold it in position. Loosen adaptor 1/2 to 1 1/2 turns counterclockwise.



Manometer should be plumbed and adjusted so fluid level is zero [0] on both sides. Move the slide rule accordingly only when the machine is OFF. Connect 1/4" diameter air hose to the tubing adaptor on the manometer. Connect the other end to a fitting installed in the flex hose. Push both ends of air hose firmly into the fittings. Check for tightness. Both the manometer valves must be opened one full turn so that the manometer can function accurately. Turn machine ON. The pressure in the tube will then move fluid in the tube.

RECLAIM FILLING INSTRUCTIONS

Your machine requires blast media to operate. Dry BLAST-N-PEEN glass beads, alox, etc. may be purchased from your distributor. This media has been treated to insure free-flow operation even under moderately high humidity conditions. BLAST-N-PEEN beads subjected to excessive moisture may be reused after thorough drying and breaking up of the lumps.

RECLAIM FILLING INSTRUCTIONS [Continued]

Select the media size suited for your operation. Dump the media into hopper of the Reclaim through the fill door. The minimum amount of media to be used is as follows:

300CFM Reclaim.....10 LBS. Media
600CFM Reclaim.....20 LBS. Media
900CFM Reclaim.....40 LBS. Media
1200CFM Reclaim.....50 LBS. Media

Reclaim hopper may be filled up level with fill door opening. Media used in system before refilling must be removed. To empty Reclaim hopper, remove the nut from the metering valve. If media doesn't flow, it has caked. Open the fill door and stir the media until it starts to flow from the metering valve. Replace the nut on the metering valve.

OPERATIONAL PROCEDURE

A. The toggle switch located on the light hood turns your machine ON and OFF. Some of the machines may be equipped with optional START and STOP switches [and individual gun switches on modified machines].

B. Adjust the air regulator to the desired operating pressure [turn the knob clockwise to increase pressure]. Observe the gauge and activate the gun; operating pressure will usually drop from closed line pressure.

C. The BLAST-N-PEEN process is easily performed as this machine was designed with the operator in mind.

1. Load parts to be processed into cabinet through door and close. Make sure door is sealed securely. If not, media will rochochet out.
2. Insert hands into rubber gloves from the front of the cabinet.
3. Hold gun in one hand and part to be processed with other hand, then activate gun by depressing foot pedal.

NOTE: Pressures of 80PSI or more normally require either a solid back rest for the part or the use of both hands and mounting the gun stationary. Without this assist, especially on longer peening operations, the operator will tire easily from fighting blast pressure.

4. Blasting technique is similar to spray painting. Smooth continuous strokes are most effective. The distance from the part affects size of blast pattern. Normal usage places the gun approximately 3" from the surface of the material.

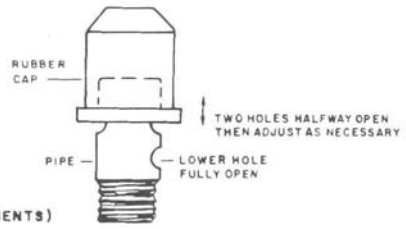
MEDIA STREAM

Check media stream for efficient operation. Correct mixture will appear as a light mist coming from the gun nozzle. As a starting point, the air inlet size of the opening on the metering valve stem should equal an area of two complete holes.

MEDIA STREAM [Continued]

EXAMPLE: Lower hole is completely open and the two upper holes 1/2 open [SEE ILLUSTRATION]. If line pulsation occurs in media delivery hose, either beads have become damp and caked, or air inlet on metering valve stem is out of adjustment. Check metering valve to see that one or more holes are open below the rubber cap. If pulsation still occurs, not enough air is being admitted in media stream.

Change size of air inlet by moving rubber cap UP-WARDS to allow more air to enter media supply line. If media flow is too light coming from nozzle, set size of air inlet to allow less air to enter the media supply line.



METERING VALVE (ADJUSTMENTS)

TROUBLE SHOOTING

A. FOGGING CABINET:

CAUTION!!! Reclaim system MUST be in operation before blasting begins.

1. DIRTY EXHAUST BAG - Extremely dirty operations can coat inside of bag in as little time as one hour, reducing fan efficiency and air movement inside the cabinet.

2. DRY EXHAUST FILTER - To maintain proper air movement and separation in system, dust bags should be shaken 2 to 3 times per day and dust emptied from filter pan once per day, or more often if necessary.

3. FAN ROTATION - Direction of fan rotation on all motors should be checked. Improper direction greatly reduces efficiency [SEE RED INSTRUCTIONAL DECAL ON BLOWER HOUSING].

4. INTAKE FILTER - A dirty intake filter can restrict incoming air and reduce air movement in cabinet below the minimum level [this applies only to machines so equipped]. Air ducts used in late model machines should be kept clean.

B. ABNORMAL MEDIA CONSUMPTION:

1. Fill door on Reclaim not in place, improper fit or worn gasket. Air entering Reclaim at this point will cause media to be carried into the bag or dry filter unit. DO NOT operate Reclaim system unless fill door is closed.

2. If a bag is not used and Reclaim is exhausted outside without a damper, never connect to any other system such as an inplant exhaust, roof vanes, or any system that will reduce exhaust pressure. This can affect the operation of Reclaim system and cause loss of good media.

C. CLEANING EFFICIENCY REDUCTION:

1. Low media level in hopper can reduce media flow - check and fill if low.

2. Improper air/metering valve adjustment on Reclaim can reduce volume of media flow.

3. Reduced air pressure may be caused by a malfunctioning regulator, a dirty moisture trap, or ruptured air line.

4. Foreign material in media line or gun may occur as a result of a clogged filter screen. Accumulation of oil or grease in media line or gun can restrict flow of media.

5. Worn gun parts such as nozzle or orifice will reduce the efficiency of the unit.

6. Orifice in gun out of adjustment.

BLAST-N-PEEN PEENING MACHINE MAINTENANCE

If BLAST-N-PEEN machines are properly installed and instructions followed, along with the simplicity of design, there should pose no major problems.

A. Air intake tubes or ducts are located towards the back and top of blast cabinet to allow makeup air to be drawn into the cabinet for efficiency of operation.

NOTE: Ducts must be open and free of obstruction. Some machines may be equipped with air intake filter in place of ducts, and the cleaning of this filter will vary according to cleanliness of area in which the unit is operated.

B. The exhaust is one of the most important items in the correct and proper functioning of the machine. Exhaust bag must be kept clean at all times. How to keep the bag clean depends on the type of peening operation used. When cleaning extremely dirty parts, it may be necessary to clean bag in less than one hour. Other types of operations may require bag cleaning only once a day. Clean the exhaust bag by opening zipper located in bottom of bag. Empty by-products and turn bag inside out and shake thoroughly. Periodic washing is suggested to reopen porosity of the cloth. Amount of washing depends on the type of operation.

C. Special static dissipating gloves of the highest quality have been provided for the dry blast process. It will be necessary to change gloves periodically as deterioration will permit static accumulation "tickle" to the operator.

D. Clean filter screen in Reclaim daily by opening door of separator and pulling screen out [ALWAYS REPLACE SCREEN AFTER CLEANING].

E. Your BLAST-N-PEEN machine was designed for the most efficient operation using dry media. Therefore, it requires clean dry air. Though media has been treated to insure free-flow operation, excessive moisture will cause it to accumulate in large lumps which will not process. Your unit is equipped with a manual moisture trap. It should be emptied when water level is a maximum of 1/2 in visual bowl [by turning petcock open]. Be sure to completely close after flushing.

ALOX KIT

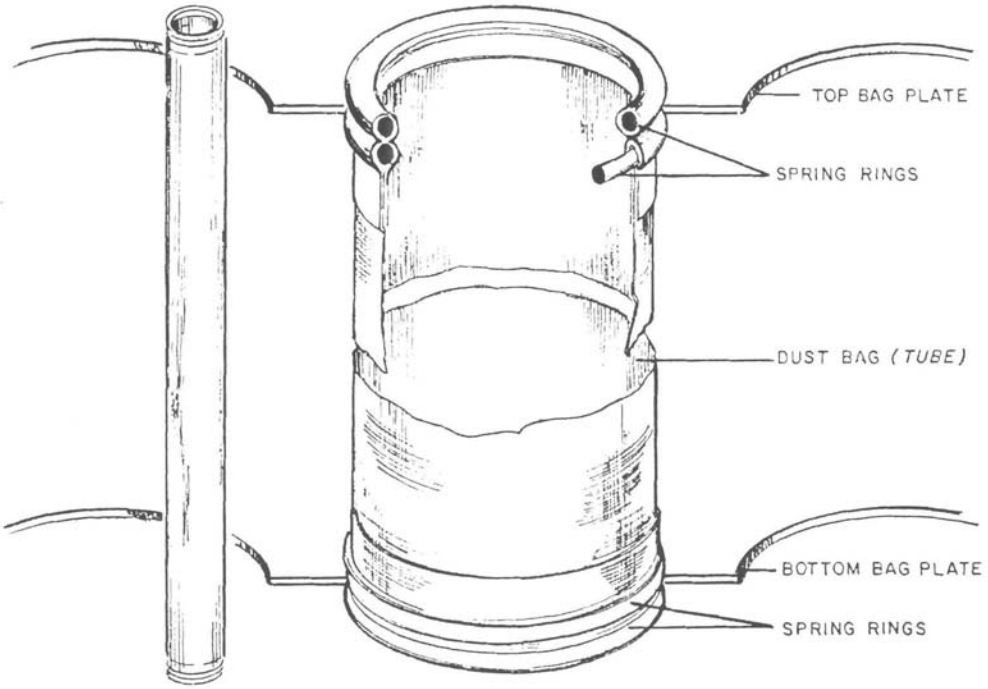
Alox Kit consists of: four rubber curtains with eyelets, curtain hooks, gun carbide nozzle, and Reclaim wearplate.

CURTAIN INSTALLATION - Match curtain to corresponding size wall. Mark hook location on cabinet wall. Drill holes through cabinet wall. Place hooks and tighten. Place eyelets on hooks and hang curtains.

TO CHANGE NOZZLE - Unscrew brass nut from gun end. Pull existing nozzle from gun. Replace with carbide nozzle and screw nut back onto gun.

WEARPLATE INSTALLATION - Remove inlet plate and pipe. Angle wearplate into Reclaim inlet until in position. Pry wearplate against outside cylinder of Reclaim and install metal screws to hold in place. Caulk crack around top of wearplate to prevent high wear in this area.

TUBE TYPE BAG INSTALLATION INSTRUCTIONS



To install dust bags, push open end of spring ringed bag with fingers far enough into hole of top plate to allow spring rings to snap into place. Bag is then held firmly by a spring ring above and also below perimeter of hole in plate [SEE ILLUSTRATION]. The bottom end of bag is similarily installed in lower plate.

Bags are designed to fit extremely tight in order to control dust leakage. Extra force by the installer is required during installation of bags.

CAUTION!!! DO NOT use sharp instrument to force snap rings into hole. To do so may accidently rupture cloth bag and seriously impair function of Dust Collector. Install one bag at a time - check for proper seating of snap rings in both plates before proceeding to next bag.

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